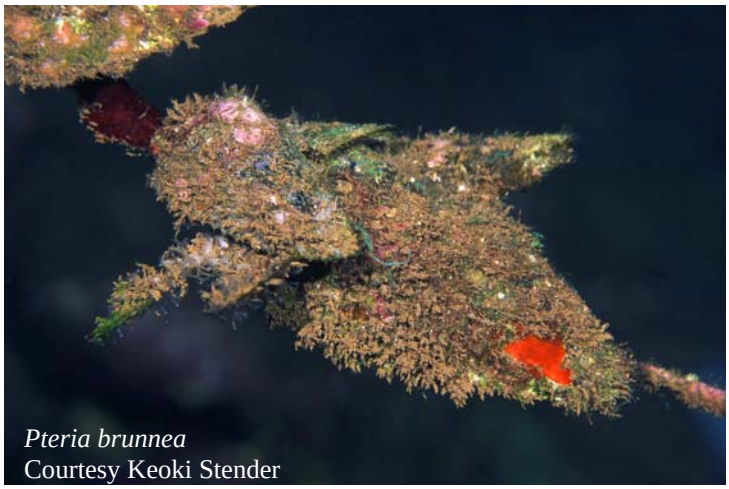

Pteria brunnea
Courtesy Keoki Stender

Marine Invertebrates

Bivalves

SPECIES STATUS:
IUCN Red List - Not considered
All Endemic except for *Pinctada*

SPECIES INFORMATION: Species with common names are: Judd's scallop (*Haumea juddi*), nahawele li'i li'i or the Hawaiian mussel (*Brachidontes crebristriarus*), the winged pearl oyster (*Pteria brunnea*), nahawele or the black purse shell (*Isognomon californicum*), and pa or the pearl oyster (*Pinctada margaritifera*). Pa occurs in many areas of the world but has a limited distribution in Hawai'i. A complete list of Hawai'i bivalves of greatest conservation need is at the end of this fact sheet. All have separate sexes and external fertilization. Both nahawele li'i li'i and pa attach to their substrates using strong byssal threads, while nahawele can move using its large foot. Judd's scallop can swim by clapping its shells. *Gastrochaena kanaka* bores into corals such as *Porites* sp. *Teredo oahuensis* is an endemic wood-boring bivalve. Other species without common names are deep water and little is known of their biology.

DISTRIBUTION: All species with common names were historically distributed throughout the State. Today they are found throughout the Hawaiian Archipelago; however, nahawele is most abundant around Maui and the island of Hawai'i. Nahawele li'i li'i is primarily found in the Main Hawaiian Islands. Many of the species without common names occur only in deep water; some have only been collected on one or two occasions.

ABUNDANCE: Pearl oysters were harvested at Pearl and Hermes Atoll in the Northwestern Hawaiian Islands, the only place they were common, but overfishing in the 1930s led to their decline and regulations limiting their harvest. The National Marine Fisheries Service surveyed Pearl and Hermes recently and found that pearl oysters were not rare, but would still not support a commercial fishery. Abundance is unknown for the rest of the species.

LOCATION AND CONDITION OF KEY HABITAT: Judd's scallop's primary habitat is on sandy ocean bottoms at depths of eight to 100 meters (26 to 328 feet). They are situated so their open shells face into the current with their top shell thinly covered with sand. If disturbed, they have been documented to swim two to three meters (six to ten feet). Both Judd's scallop and nahawele li'i li'i form patches or beds. Nahawele li'i li'i primary habitat is limestone shoreline at the low tide mark. However, in shoreline areas where freshwater and salt water mix they grow to their largest size. They can also be found on basalt shorelines, although in lower

densities. Pa is found in shallow waters in between corals. The winged pearl oyster's primary habitat is on species of black coral; however, they also can cluster on wire corals. They may also host bryozoans on their shells. Nahawele form clusters in crevices at the high tide mark and prefer brackish waters. Nahawele on islands other than Maui and the island of Hawai'i are found individually in more saline waters. Many of the species without common names are from deep water and have never been seen *in situ*.

THREATS:

- Historically, pearl oysters were threatened by harvesting them for their pearls;
- Pollution is a direct threat to these species, because they are filter feeders. This also makes them potentially good indicators of water quality in their habitats.

CONSERVATION ACTIONS: In addition to common statewide and marine conservation actions, specific actions include:

- Collaborate to reduce nearshore pollution;
- Maintain healthy habitat.

MONITORING:

- Survey for populations and distribution in known and likely habitats.

RESEARCH PRIORITIES:

- Improve understanding of factors affecting the species population size and distribution.

References:

Hoover JP. 1998. Hawaii's sea creatures, A guide to Hawaii's marine invertebrates. Honolulu, HI: Mutual Publishing. 366 pp.

Kay AE. 1979. Hawaiian marine shells reef and shore fauna of Hawaii, section 4: Mollusca. Honolulu, HI: Bishop Museum Press. 653 pp.

Bivalve SGCNs

Family	Scientific Name	Hawaiian Name	Common Name
Mytilidae	*Brachidontes crebristriatus*	nahawele li` ili`i	Hawaiian mussel
Mytilidae	*Amygdalum newcombi*	None	None
Mytilidae	*Lithophaga fasciola*	None	None
Mytilidae	*Musculus aviarius*	None	None
Mytilidae	*Septifer rudis*	None	None
Mytilidae	*Stenolena hawaiensis*	None	None
Mytilidae	*Terua pacifica*	None	None
Glycymerididae	*Glycymeris arcodentiens*	None	None
Glycymerididae	*Glycymeris diomedea*	None	None
Glycymerididae	*Glycymeris kauaia*	None	None
Glycymerididae	*Glycymeris kona*	None	None

Family	Scientific Name	Hawaiian Name	Common Name
Glycymerididae	*Glycymeris molokaia*	None	None
Glycymerididae	*Glycymeris nux*	None	None
Arcidae	*Bathyarca pisum*	None	None
Arcidae	*Arca kauaia*	None	None
Arcidae	*Barbatia hiloa*	None	None
Arcidae	*Barbatia molokaia*	None	None
Arcidae	*Barbatia nuttingi*	None	None
Isognomidae	*Isognomon californicum*	nahawele	Black purse shell
Malleidae	*Neoaviculovulsa coralicola*	None	None
Pteriidae	*Pinctada margaritifera*	pa	Black-lip pearl oyster
Pteriidae	*Pteria brunnea*	None	Winged pearl oyster
Limidae	*Lima hawaiana*	None	None
Limidae	*Lima keokea*	None	None
Limidae	*Lima lahaina*	None	None
Limidae	*Lima parallela*	None	None
Dimyidae	*Dimya mimula*	None	None
Dimyidae	*Dimya molokaia*	None	None
Pectinidae	*Chlamys alii*	None	None
Pectinidae	*Chlamys kauaensis*	None	None
Pectinidae	*Haumea juddi*	None	Judd's scallop
Propeamusiidae	*Propeamussium diomedeum*	None	None
Propeamusiidae	*Propeamussium kauaium*	None	None
Propeamusiidae	*Propeamussium molokaium*	None	None
Propeamusiidae	*Propeamussium nesiotum*	None	None
Propeamusiidae	*Propeamussium paiololoum*	None	None
Anomiidae	*Anomia tyria*	None	None
Sportellidae	*Anisodonta angulata*	None	None
Sportellidae	*Hitia ovalis*	None	None
Lucinidae	*Ctena transversa*	None	None
Lucinidae	*Pillucina hawaiiensis*	None	None
Gastrochaenidae	*Gastrochaena kanaka*	None	None
Gastrochaenidae	*Gastrochaena oahuana*	None	None
Teredinidae	*Teredo oahuensis*	None	None
Veneridae	*Gouldia cookei*	None	None
Galeommatidae	*Leiochasmea thaanumi*	None	None
Galeommatidae	*Scintilla hiloa*	None	None
Lasaeidae	*Kellia hawaiensis*	None	None
Lasaeidae	*Kellia rosea*	None	None
Lasaeidae	*Kona symmetrica*	None	None
Lasaeidae	*Lasea hawaiensis*	None	None
Carditidae	*Cardita excisa*	None	None
Carditidae	*Cardita thaanumi*	None	None
Condylocardiidae	*Carditella hawaiensis*	None	None
Psammobiidae	*Solecurtus baldwini*	None	None
Semelidae	*Lonoa hawaiensis*	None	None
Tellinidae	*Macoma obliquilineata*	None	None
Tellinidae	*Tellina hawaiensis*	None	None
Tellinidae	*Tellina oahuana*	None	None
Mactridae	*Mactra thaanumi*	None	None

Family	Scientific Name	Hawaiian Name	Common Name
Cuspidariidae	*Cuspidaria dispar*	None	None
Cuspidariidae	*Cuspidaria hawaiensis*	None	None
Cuspidariidae	*Cuspidaria pailoloana*	None	None
Poromyidae	*Poromya transversa*	None	None
Verticordiidae	*Euciroa pacifica*	None	None
Verticordiidae	*Halicardia gouldia*	None	None
Verticordiidae	*Policordia diomedea*	None	None
Nuculidae	*Nucula hawaiensis*	None	None
Nuculidae	*Lyonsia oahuensis*	None	None

Isognomon californicum
Courtesy Keoki Stender